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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SUNG, GERALD LUTHER

ART UNIT	PAPER NUMBER
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3741

NOTIFICATION DATE	DELIVERY MODE
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05/13/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/507,544	Applicant(s) ROM, HAIM	
	Examiner GERALD L. SUNG	Art Unit 3741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/13/2004, 2/14/2006, 12/19/2008, 10/21/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is a first office action in response to the Response to the Requirement for Election/Restriction filed on 29 January 2010.

Election/Restrictions

2. Applicant's election with traverse of Group I in the reply filed on 29 January 2010 is acknowledged. The traversal is on the ground(s) that the restriction is improper under combination/subcombination. This is not found persuasive because the application is filed under PCT; accordingly the standard for restriction is unity of invention, where the Applicant has filed several species of a common technical feature which is not special (refer to the rejection below). Withdrawal of the restriction would be proper upon allowance of a common special technical feature.

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 26-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 29 January 2010.

Claim Objections

4. Claim 1 is objected to because the limitation "during continuous flow of a compressible fluid from said first to said second volumetric device work is performed..." should read "during continuous flow of a compressible fluid from said first volumetric device to said second volumetric device, work is performed..."

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5. Claim 3 is objected to because “said first and second volumetric device” should be pluralized.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-25 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 7,621,116.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the current application is encompassed entirely by US 7,621,116 where the application merely omits the type of transmission applied in the invention.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Regarding claim 3, the limitation "a first volumetric... a second volumetric" render the claims indefinite because it is unclear if the "a first volumetric device [and second]" in claim 3 are referring to the "a first volumetric device" of claim 1. If so, the device should be referred to as "said first volumetric device."

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 1-8, 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. US 5,165,238 or in the alternative, over Paul et al. US 5,165,238 in view of Yang US 4,825,827.

14. Regarding claim 1, referring to figure 2, Paul discloses a continuous heat engine comprising a first volumetric device 80 and a second volumetric device 82 where during continuous flow of compressible fluid from the first to the second volumetric device, work is performed. Paul is silent to the varying sizes of the first and second volumetric devices.

15. The claimed limitation of the first volumetric device being smaller in volume than the second volumetric device is held to be an obvious change in size/proportion. The Federal Circuit has held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469

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U.S. 830, 225 USPQ 232 (1984). Because a mere change in the size of the compression volumetric device would merely change the fluid flow/pressure available to the second volumetric device, a smaller first volumetric device is not held patentably distinct over the Paul reference.

16. In addition, Yang teaches a volumetric device comprising a compression chamber (first) and an expansion chamber (second) where the compression chamber is clearly smaller than the expansion chamber.

17. One of ordinary skill in the art at the time of the invention would have found it obvious to modify the compression chamber 80 of Paul so that the chamber is proportionally smaller than the expansion chamber as taught by the configuration of Yang to increase compression efficiencies. (see Yang disclosure of invention)

18. Regarding claims 2-8 and 11-16, Paul discloses a turbocharger 90 driven by the exhausts of the second volumetric device, a first volumetric device 80, a means for feeding a compressible fluid to said first volumetric device via an independent flow path elements 88, 100, a heat source for each independent flow path, 78, a means for driving said first volumetric device for sequentially transferring controlled volumes of said fluid to the corresponding heat source by positive displacement cycles (Wankel type), a second volumetric device for receiving heated controlled volumes of said fluid from the corresponding heat source via the corresponding independent flow paths, means for driving said second volumetric device for sequentially discharging said heated controlled volumes of the fluid by positive displacement cycles (Wankel type), and means for synchronizing 98 said means for driving said first and second volumetric

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devices, the synchronizing means comprises a common shaft, the means for feeding comprises a compressor 88, the discharge of the second volume is to a turbine (generally at 90), the heat sources are combustors 78. The first and second volumetric devices are keyed to the same shaft. The compressible fluid is air, the combustors 78 are fed with the air and fuel, the devices 80, 82 are Wankel type, the apparatus comprises at least one compressor 88 for increasing the pressure of the volume of fluid, a turbocharger 90, and intercoolers 92.

19. Claims 9-10 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. US 5,165,238 in view of Paul et al. US 5,168,846 or in the alternative, over Paul et al. US 5,165,238 in view of Yang US 4,825,827 and Paul et al. US 5,168,846.

20. Regarding claims 9-10 and 17-18, Paul, or in the alternative Paul and Yang, disclose all elements except for a transmission where the compressor is keyed to the volumetric devices and a load.

21. Paul teaches a Wankel type device 2 keyed to a turbocharger 6 and a load, a transmission 50 capable of disengaging the devices depending on the load.

22. One of ordinary skill in the art at the time of the invention would have found it obvious to key the turbocharger shafts of Paul to the volumetric devices of Paul in a manner taught by Paul to provide additional power in driving a load when necessary.

23. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. US 5,165,238 in view of Deutschmann et al. US 4,753,076 or in the

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alternative, over Paul et al. US 5,165,238 in view of Yang US 4,825,827 and Deutschmann et al. US 4,753,076.

24. Regarding claims 20-21, Paul or the combination of Paul and Yang discloses all elements except for a two-staged supercharger with intercooling between stages.

25. Deutschmann teaches a two staged supercharging comprising turbochargers 13, 16 with intercooling at intercoolers 28 between each stage.

26. One of ordinary skill in the art at the time of the invention would have found it obvious to provide a second turbocharged stage with corresponding intercooling means to the apparatus of Paul as taught by Deutschmann as part of a well known means of increasing compression efficiency.

27. Claims 19 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paul et al. US 5,165,238 in view of Zucrow US 2,531,761 or in the alternative, over Paul et al. US 5,165,238 in view of Yang US 4,825,827 and Zucrow US 2,531,761.

28. Regarding claims 19 and 22-25, referring to the claims 1-3 above, Paul or the combination of Paul and Yang discloses all elements except for the details of a second burner and a system.

29. Zucrow teaches a secondary burner 48 in flow communication with a separate turbine 27 from the main system 2, 3, 4, where the secondary heater heats exhaust for a third volumetric device 27 rotating about a third shaft where the exhaust fluid is controllable via valves in conduits 70, 49. The inclusion of a plurality of volumetric devices is held to be an obvious duplication of parts over the single turbine 27. Zucrow discloses a single conduit with a valve means to a single turbine from a secondary

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combustor 48 where the inclusion of a plurality of conduits with valve means tot a plurality of turbines would not result in new and unexpected results. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). Zucrow also discloses a bypass valve in conduit 70 which disengages the main motor assembly and the third volumetric device.

30. One of ordinary skill in the art at the time of the invention would have found it obvious to modify the apparatus of Paul to include a secondary burner and third volumetric device as taught by Zucrow in order to increase the work output capability.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERALD L. SUNG whose telephone number is (571)270-3765. The examiner can normally be reached on M-F 9am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cuff can be reached on (571) 272-6778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gerald Sung
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7 May 2010

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